The Comparative Retention of National Health Service Corps and Other Rural Physicians

Results of a 9-Year Follow-up Study

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Objective.—To contrast the retention of physicians serving National Health Service Corps (NHSC) Scholarship Program obligations in rural settings to that of non-NHSC physicians working in the same or similar practices, and to identify promising retention-enhancing strategies.

Design.—Cohort study.

Participants.—Four hundred twelve primary care physicians initially identified during an earlier study as working in a national stratified random sample of 178 externally subsidized rural clinics in 1981. Thirty-six percent were serving obligations to the NHSC, nearly all through the NHSC's Scholarship Program. The NHSC and non-NHSC inception cohorts (those first coming to their 1981 [or "index"] practices from May 1979 through December 1981) were created from within the entire group for use in most analyses.

Intervention.—In 1990, physicians were resurveyed to learn of their backgrounds, experiences in their index practices, and their subsequent career moves.

Results.—By 1984 and in each year thereafter, fewer NHSC than non-NHSC physicians of the entire respondent cohort remained (1) in their index practices, (2) in their index communities, and (3) in practice in any rural county ($P<.001$). In the inception cohort, fewer NHSC than non-NHSC physicians were retained within all three settings by the third year after their initial dates of employment ($P\leq.01$). After 8 years of employment, group retention rates for NHSC and non-NHSC inception cohort physicians were 12% vs 39% in the index practice and 29% vs 52% in nonmetropolitan practice. Physicians in both NHSC and non-NHSC groups who left their index practices generally left rural practice altogether.

Conclusions.—When compared to non-NHSC physicians working in comparable rural settings, the retention of rural NHSC physicians is seen to be poor and only partially explained by fixed physician, practice, or community variables. Long-term retention of NHSC providers is now receiving much needed attention at the federal level.

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THE NATIONAL Health Service Corps (NHSC or Corps) has placed over 16 500 providers in medically underserved rural and urban communities over the past 20 years.[1] Little is known about the subsequent retention of these providers past their initial service obligation terms. This article describes the findings from a 9-year follow-up study documenting the retention experiences of (1) physicians serving NHSC Scholarship Program obligations in rural settings and (2) a comparison cohort of mainstream (non-NHSC) physicians working in the same or similar subsidized rural medical practices.

See also pp 1559 and 1597.

The NHSC was created in 1970 under the Emergency Health Personnel Act (Pub L 91-623) within the US Public Health Service to provide physicians and other health providers to communities and facilities otherwise unable to attract or retain them. Congress recently reaffirmed the Corps' importance by passing the NHSC Revitalization Amendments of 1990 (Pub L 101-597) and by expanding fivefold appropriations to the Corps' recruitment programs.[2]

The NHSC has pursued its mission by focusing its efforts on recruiting new providers into needy rural and urban areas. The Corps' Scholarship Program is its largest recruitment mechanism, placing over 10 800 providers since 1972.[3] This program provides financial support to health professional students during training in a year-for-year exchange for obligated service in selected, needy sites.

Throughout its history, the Corps has stated its goal of retaining providers past their periods of service obligation,[4-6] but it has given considerably less attention and few dollars to retention. Re-

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cently, provider retention has become a clearer priority for the NHSC.[7] It has been recognized that retaining current and future NHSC providers is as crucial as turning up the NHSC pipeline to bring in new providers.[8,9] Both the Corps and the US Office of Rural Health Policy have suggested new long-term retention strategies, including (1) preferentially selecting minorities and students with backgrounds in rural and medically underserved areas, (2) increasing the number of contacts the Corps has with its providers, (3) providing locum tenens relief for providers, and (4) developing linkages between residency training programs and Public Health Service sites.[3,8]

It is important to understand clearly what past retention rates have been for Corps physicians as a means for setting future retention targets and for measuring past and future programmatic success. To date, there have been only limited data available describing the retention of NHSC physicians and other providers. The figure most often cited places the retention rate of NHSC physicians at around 35% to 40%, reflecting the percentage of NHSC physicians who initially remain in their assigned communities after completing obligations to the Corps.[1,10-14]

The purposes of this study are (1) to document the actual long-term retention experiences of rural, primary care NHSC Scholarship Program physicians, and to contrast these experiences with the retention of other (non-NHSC) physicians; and (2) to identify the correlates of retention duration for NHSC physicians in order to assess the likelihood of success of several current and proposed retention-enhancing strategies. The focus is on Corps physicians placed in rural practice sites because physicians constituted approximately 80% of all Corps assignees in the 1980s,[15] and 70% of these were placed in rural areas.[1,3]

METHODS

Original Study: 1977-1982

In 1978, the Cecil G. Sheps Center for Health Services Research of the University of North Carolina at Chapel Hill undertook a comprehensive national evaluation of subsidized rural primary health care organizations.[16-19] Nationwide, 464 practice organizations were identified that met the following inclusion criteria: (1) providing primary care health services in rural areas, (2) functioning prior to 1978, and (3) receiving outside subsidies at some point in their history. "Rural" organizations were defined as having at least one clinic site located a specified distance from the nearest city with a population of 25 000, ie, more than 24 km along an interstate highway, more than 16 km along noninterstate roads, or across a state line. Qualifying practice organizations included federally funded community health centers, and group, hospital, and physician-owned practices partially funded through federal (eg, §329 and 330, Women, Infants, and Children Program, Comprehensive Employment and Training Act, NHSC), state, foundation (eg, the Robert Wood Johnson and Kellogg foundations), or local support mechanisms.

In 1980, as part of the original study, qualifying organizations were stratified by type of practice (community health center, solo practice, group practice, hospital satellite, and other), scale of practice (single or multiple site), and region of the United States. A 50% self-weighted random sampling design was used to select 259 cases for a more in-depth study. Sixty-seven organizations were found to be ineligible following subsequent screening interviews, yielding a final sample of 192 qualifying organizations. In the fall of 1980, names of all physicians (n=469) working in each of the 192 organizations' principal rural practice sites were obtained from practice administrators. These rosters were refined through mail questionnaires completed by the physicians themselves in spring 1981 and were updated in 1982 through a resurvey of the practices.

Follow-up Study: 1990

To understand the retention experiences of the physicians identified in the original study, a follow-up mail survey of the physicians was conducted in 1990. Of the 469 physicians providing care in the sample organizations at any point during 1981, a total of 421 were identified as practicing in primary care specialties (family medicine, internal medicine, pediatrics, and general practice). Of these, the 412 physicians still living in 1990 comprised the target population for this study. These physicians worked in 178 of the 192 organizations.

Current (1990) addresses were found for 375 (91%) of these 412 physicians from practice managers, published physician rosters, state medical licensure boards, and the American Medical Association's Physician Masterfile. Physicians were sent two mailings of a 10-page questionnaire, followed by an abbreviated questionnaire to remaining nonrespondents.

Questionnaire items included basic demographic characteristics, medical training histories, and start and end dates of employment in the index rural practice, ie, the practice where the physician worked in 1981. Physicians reported whether their initial work in that practice fulfilled an NHSC or other service obligation. Those who had left their index practices described all subsequent positions. Subsequent positions were classified as either rural or urban (ie, in a nonmetropolitan or metropolitan county according to June 13, 1986, Office of Management and Budget designations), as within either the same community as the index practice (within 24 km) or other community, and as involving primary care, non–primary care, or other types of work or training. Emergency department and urgent care positions were classified non–primary care.

Several other physician characteristics elicited in the questionnaire are currently used as scholarship program applicant selection criteria, thought to be associated with longer retention.[3,9] These criteria are (1) a rural background, (2) an interest in rural medicine, and (3) an interest in providing care for medically underserved patient populations.[15,20] Physicians' retrospective reports of their interest in rural and underserved health care were ascertained through two questions: "When you first came to your [index] practice, how important to you was it to (1) live in a small community and (2) care for a medically needy patient population?" Response categories ranged from "not important" (value 1) to "very important" (value 5).

Data on several practice, town, and county characteristics also were obtained from the 1980 US Census: (1) town population size, (2) percentage of county minority population (black, Hispanic, and Native American), and (3) percentage of county population below poverty level. Patient-charge collection rates were obtained from practice administrators in 1980.

Initial findings presented below report on the retention experiences of the entire prevalence cohort of physicians, ie, all physicians found to be practicing in the sampled organizations in 1981. These physicians had come to their index practices between 0 and 41 years prior to 1981. Descriptions of these individuals, while relevant to understanding the retention experiences of then-employed medical staffs at comparable rural clinics, were not representative of all physicians ever having come to work at these clinics. Therefore, an inception cohort of physicians was constructed for the bulk of the analyses below, comprising those first coming to work in their index practices from May 1979 through December 1981.

"Retention" was defined using a concept we call a *retention profile*. This concept acknowledges that physicians

Table 1.—Description of Inception Cohort*

	NHSC (n=93)	Non-NHSC (n=79)	P†
Demographic Characteristics			
Mean age in 1981, y	30.0	34.8	.0001
Men, No. (%)	79 (84.9)	62 (79.5)	.35
White, No. (%)	72 (84.7)	58 (82.9)	.75
Rural upbringing, No. (%)	49 (52.7)	39 (49.4)	.66
Training, Certification, Prior Work, and Values			
Completed residency, No. (%)	64 (68.8)	61 (77.2)	.22
Residency specialty, No. (%)			
Family practice	33 (35.9)	33 (41.8)	.43
Internal medicine	33 (35.9)	19 (24.0)	.09
Pediatrics	11 (12.0)	12 (15.2)	.54
Board-certified, No. (%)	45 (57.0)	41 (60.3)	.68
Importance of caring for needy‡	4.03	4.16	.38
Importance of living in small community‡	3.17	3.61	.02
Previous rural practice, No. (%)	2 (2.2)	24 (31.2)	<.001
Index Practice Characteristics			
Community or migrant health center, No. (%)	31 (33.7)	24 (30.4)	.64
Patient-charge collection rate, %	74.7	73.6	.74
Community Characteristics			
Town population mean	4854	5744	.47
County population black, Hispanic, and Native American, %	18.8	17.9	.80
County population below poverty level, %	16.9	16.6	.83

*NHSC indicates National Health Service Corps. Some column totals short due to missing data.

†Based on *t* tests for group mean differences for continuous variables and χ^2 tests for group differences for dichotomous variables.

‡Scale values: 1, not important; 3, neutral; and 5, very important.

may be regarded by different observers as successfully retained when remaining in any of several locations. The retention profile, as used here, simultaneously measures for each physician the total years of retention within the index practice, within the index community (within 24 km of the index practice), and within any nonmetropolitan county, and is displayed for a physician group as three survival curves plotted side-by-side.

Chi-square tests were used to test for statistically significant group frequency differences of dichotomous variables. To test for statistically significant differences in group mean values of continuous variables, *t* tests were used. For group differences in right-censored continuous data (ie, survival curve data), the SAS (Version 5.18) PHGLM procedure was used.[21] This latter procedure fits the Cox[22] proportional hazards linear regression model using the Breslow[23] modification for tied data. A *P* value of .05 was considered significant in all analyses.

RESULTS

Three hundred four (81.1%) of the 375 located physicians responded to the questionnaire. The NHSC and non-NHSC physicians responded at equal rates, and no other response biases were identified.

Entire Cohort Findings

Thirty-six percent (n=109) of the responding physicians reported that their initial work in their index practices fulfilled a NHSC service obligation. All but four served through the Corps' Scholarship Program. Six other physicians had non-Corps practice obligations and were grouped with the non-NHSC physicians in all analyses. Physicians were predominantly white (87%) and male (85%), with a mean age of 36 years in 1981. Sixty-two percent were board-certified. Ninety-four percent worked in nonprofit organizations. The mean population of the towns where they worked in 1981 was just less than 5000. Corps physicians were similar to the comparison physicians, except they were younger and, as a group, they had begun working in their index rural practices more recently (mean start year, 1976 vs 1979, respectively; P=.0001).

At the time of the follow-up survey in May 1990, NHSC physicians were much less likely than non-NHSC physicians to have remained in their index practices (14.7% vs 39.2%; P<.001), in their original communities (22.9% vs 47.9%; P<.001), or in any rural county (33.6% vs 52.9%; P=.001). The percentages of physicians in these two groups remaining at each of these three locations differed for each of the years 1984 through 1990 (P<.001).

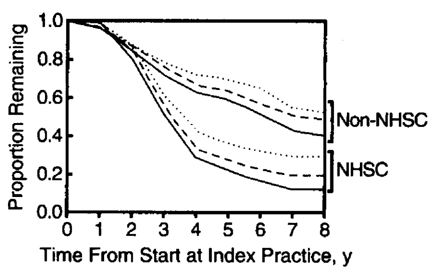

Fig 1.—Comparative retention of National Health Service Corps (NHSC) and non-NHSC physicians in their index practices (solid line), index communities (dashed line), and within nonmetropolitan counties (dotted line) among the inception cohort.

Inception Cohort Analyses

All analyses below address the inception cohort subset of physicians who arrived in their index practices from May 1979 through December 1981. Ten physicians working less than 2½ days per week, all in the non-NHSC physician group, were excluded.

The NHSC physicians, in comparison with the non-NHSC physicians, were younger and less likely to have had rural practice experience prior to arriving at their index practices (Table 1). Corps physicians also placed less importance on living in a small community. Caring for medically needy patient populations was important to both groups. Practice organization types and patient-charge collection rates (a reflection of both the service orientation of the practices and the financial status of their patient populations) were comparable. Community characteristics also did not differ. Between-group similarities outnumbered their differences.

Figure 1 shows the total number of years worked by NHSC and non-NHSC subgroups in their index practices, communities, and any rural counties. Total years of work for physicians were measured from their first month of employment in their index practices to the month they stopped working in a primary care specialty in these practices, communities, and any US nonmetropolitan counties. Periods of work in nonmetropolitan counties prior to coming to work in the index practices were not included, tending to yield a relative underestimate of total retention duration for non-NHSC physicians. Retention durations within the index practice, index community, and any nonmetropolitan area were significantly less for the NHSC subgroup by the third year and remained lower for each year thereafter ($P \leq .01$). The median retention tenure for NHSC and non-NHSC physicians

Table 2.—Adjusting Differential Retention Durations of Corps vs Non-Corps Groups for Identified Group Differences Among the Inception Cohort

	Index Practice Retention Duration		Nonmetropolitan Practice Retention Duration	
Independent Variables	**Hazard Ratio**	***P***	**Hazard Ratio**	***P***
	Model 1a		**Model 2a**	
Corps status	2.11	<.0001	1.74	.004
	Model 1b		**Model 2b**	
Corps status	1.98	.0002	1.56	.02
Internal medicine–trained	1.43	.05	1.38	.11
Importance of small community living	0.79	.002	0.70	<.0001

was 3.0 vs 6.0 years in their index practices, and 3.0 vs 7.4 years in their index rural communities, respectively. By the eighth year, only 12% of the Corps physicians vs 39% of the non-NHSC physicians remained within their index practices, and 29% vs 52% remained in nonmetropolitan practice, respectively. The falloff in retention for the non-NHSC subgroup followed a gradual, fairly constant rate. On the other hand, the retention falloff rate for the NHSC subgroup was relatively shallow for the first 2 years, became steeper from the second through fourth years when service obligations were completed, then again became shallower.

The hazard ratio (roughly, the relative risk of leaving a particular practice setting at any point in time) of NHSC to non-NHSC physicians was 2.11 for leaving the index practice (95% confidence interval,1.76 to 2.53) and 1.74 for leaving rural practice altogether (95% confidence interval,1.43 to 2.11) (Table 2, models 1a and 2a). Multivariate proportional hazards models were constructed to determine if the differential retention durations for the NHSC and non-NHSC groups were explainable by the identified differences ($P \leq .1$) in group demographic characteristics, backgrounds, and attitudinal characteristics (Table 1). Two multivariate models were constructed, with index practice retention duration and nonmetropolitan practice retention duration as dependent variables in each model, respectively. Initial model independent variables (not shown) were Corps status, age, importance placed on living in a small community, internal medicine training, and prior rural practice experience. In these models, the hazard ratios of the age and prior rural practice experience variables were far from reaching statistical significance. Because these variables also violated a statistical requirement of hazards modeling (ie, that hazard rates remain roughly proportional over time), they were dropped from the models. In models adjusting for the remaining three variables (Table 2, models 1b and 2b), the hazard ratios for the Corps status variable dropped only modestly from those of the univariate models. Thus, the majority of the Corps vs non-Corps group retention difference remains unexplained.

Thirty-six (39.1%) of the 92 NHSC physicians remained in their index practices beyond their service obligations, and an additional four (4.3%) initially relocated their work to other practices within the same community. Physicians who initially remained within their index practices, however, experienced a steady attrition thereafter: 49% moved on within 3 years.

Only seven (7.5%) of the 93 NHSC physicians reenlisted in the NHSC following their initial terms of obligation, and six of these remained in their index practices. The mean additional years of NHSC service for reenlisters was 2.1 (range, 1 to 3).

The Corps has always hoped that its alumni who elect to leave the Corps and/or their Corps-assigned rural practices will choose to relocate to other practices in the same community or to other rural communities. Few of this study's relocating physicians settled in their index communities or in nonmetropolitan areas. The 84 NHSC physicians who left their index practices at any point over the decade were no more or less likely than the 54 relocating non-NHSC physicians to move initially to another primary care practice in the same community (8.3% vs 14.8%, respectively; P=.23) or to any rural county (21.4% vs 16.6%, respectively; P=.49). Corps and non-Corps physicians who left their index communities or rural areas at any point over the decade almost never returned.

Similar percentages of 84 NHSC and 54 non-NHSC physicians who relocated from their index practices initially chose other clinical positions (72% vs 77%, respectively). The NHSC relocators were more likely than non-NHSC relocators to pursue further clinical training (25% vs 7%, P=.01), even though they were equally likely to have completed an earlier residency. Fourteen (70%) of the 20 NHSC physicians who entered residencies or fellowships pursued training in non–primary care disciplines.

Retention Correlates: Inception Cohort

The correlates of retention duration within the index practice and in any nonmetropolitan practice are shown for NHSC physicians in Table 3. The relative hazard of leaving the index practice was less (ie, retention duration was longer) for those who were older, placed greater importance on small community living, had completed residencies, were board-certified, were trained in family medicine, and were not trained in internal medicine. Among NHSC physicians, retention in rural practice in general was greater only for residency-trained and board-certified physicians, those trained in family medicine, and those placing greater importance on small community living.

For the NHSC group, retention duration within the index practice was not associated with any of the practice or community variables. Retention within nonmetropolitan areas was longer only for NHSC physicians whose index practices had higher collection rates or were situated in counties with lower percentages of minority population. Why some index practice and index county characteristics should predict nonmetropolitan practice retention but not retention within the index practice is unclear.

When bivariate models of this same list of variables were repeated for non-NHSC physicians, none of the physician, practice, or county variables were found to be associated with retention in the index practice. Only the importance placed on living in a small community was associated with longer retention duration in nonmetropolitan areas (P=.01). Thus, differential retention durations among rural physicians not serving in the Corps are due to other, unknown factors.

Figure 2 displays data on retention within nonmetropolitan practice for NHSC physician groups differing on a number of factors thought to be important retention predictors. Retention is longer only for physicians who (1) value living in a small community, (2) completed residencies, and (3) trained in family medicine. Although the NHSC has sought to enhance provider retention by selecting applicants who were raised in rural areas and those who place more importance on working with needy patients, these factors are shown not be associated with retention duration. The town population of the index practice also did not predict retention duration, even though one might suspect that re-

Table 3.—Correlates of Retention Duration for National Health Service Corps Physicians Among the Inception Cohort

	Tenure in Index Practice		Tenure in Nonmetropolitan Practice	
	Hazard Ratio	***P***	**Hazard Ratio**	***P***
Physician Variables				
Age	1.13	.03	1.09	.15
Men	0.94	.84	1.00	.99
White	1.04	.90	0.80	.48
Raised in rural area	1.07	.77	1.05	.83
Completed residency	0.52	.007	0.53	.01
Family medicine–trained	0.56	.02	0.54	.02
Internal medicine–trained	1.61	.04	1.49	.11
Pediatrics-trained	0.93	.83	1.11	.76
Board-certified	0.55	.01	0.55	.03
Importance of providing care to needy	0.92	.51	1.09	.56
Importance of living in small community	0.81	.02	0.72	.001
Practice Variables				
Community or migrant health center (vs other practice types)	1.10	.68	1.21	.45
Patient charge collection rate	0.68	.43	0.35	.05
Community Variables				
Town population	1.00	.53	1.00	.42
County population percentage black, Hispanic, and Native American	1.007	.10	1.011	.02
County population percentage below poverty level	1.00	.20	1.00	.42

tention is a greater problem for smaller communities.

COMMENT

Provider retention within medically needy areas beyond periods of service obligation has long been a goal of the NHSC. However, retention is perceived by many as a problem for the Corps, whose physicians are seen as coming to needy communities for their brief obligation periods, then moving on.[24,25] Replacing each departing NHSC physician with another new assignee is not a wholly satisfactory solution. This "revolving door"[14] staffing pattern is disruptive to communities, where people are less willing to seek medical care from organizations staffed by providers who they believe are not committed to their communities and who will be gone soon. Consequences for rural practices of the rapid turnover of Corps physicians include (1) the persistently lower patient encounter rates for newly arriving, unestablished, and inexperienced physicians[26,27] and (2) an on-going staffing vulnerability when relying on replacement NHSC physicians whose availability is subject to the shifting federal funding levels for the Corps.[1,24]

Past formal studies have documented NHSC physician retention rates beyond service obligation periods of 33% to 43%.[12-14] Although researchers have differed on how successful they regard a 40% retention rate, some federal officials and agencies have regarded this retention performance as an indication of the Corps' success.[1,3,10] The NHSC retention studies generally have had significant methodological limitations. All prior studies of which we are aware have lacked comparison groups, and none has reported findings separately for rural vs urban NHSC physicians. Also, prior studies generally have looked at only short-term turnover rates. Further, nearly all prior studies have used survey data from Corps providers prior to service obligation completion, relying on physicians' self-reported career plans and not actual post-Corps career moves.

Only two prior studies have generated denominator-based retention rates using actual location data on NHSC alumni. The first was a small study of NHSC volunteers (n=36), documenting a 43% initial retention rate within the community.[28] The second and much larger study documented that, as of 1982, 24% of all NHSC physician and nonphysician alumni were still located within primary care health professional shortage areas.[29] However, because study findings were based on location data from providers who ranged from 1 to 10 years past their service obligations, this study fails to inform us about retention rates at any specific year following their original placement by the Corps.

Data reported here are based on the career moves of a national cohort of rural NHSC Scholarship Program alumni followed over a 9- to 11-year period beyond their original Corps placement. The career behaviors of these physicians confirm the initial retention plans reported in other studies: 43% remained in their assigned communities past their service obligations. By following subsequent moves over time, however, it is seen that those initially remaining in their Corps practices and communities moved on in short order. Half were gone 3 years later.

To understand whether retention is a particular problem for the Corps, we contrasted the retention duration of NHSC physicians to that of comparable physicians in the same or similar practices and communities. Retention durations were statistically and meaningfully shorter for NHSC physicians. Even when controlling for important fixed community, practice, and individual physician factors, NHSC status remained the strongest predictor of shorter retention. No evidence was found to support the sometimes heard assertion that Corps physicians leave their assigned communities so quickly because they come from the wrong backgrounds or because they do not value the Corps' mission.[10,30] Similarly, poor retention cannot be labeled an inevitable consequence of the Corps' need to place physicians in the neediest (and least desirable) sites[10]: retention for non-Corps physicians in these same practices and communities was significantly better.

On the other hand, data presented here support the thesis that the seeds of the Corps' retention problem are sown when it places physicians who are relatively disinclined toward rural living into rural settings, as reported recently by Stone et al.[14] Mismatches between other physician interests and needs and their Corps sites likely contribute further to retention failure. The Corps' site placement process, under the requirements of the Health Professions Educational Assistance Act of 1976 (Pub L 94-484), is structured to assure that the neediest communities receive provider placements, rather than to locate sites reasonably well matched to providers and their families, which may in turn influence retention. The site placement process has been identified repeatedly as a problem for Corps physicians.[6,31-35] It has been cited as an important reason for low morale among Corps providers,[10,24,32,33,36] as well as one reason some elect to default on their obligations.[33]

Another likely explanation for retention duration differences between NHSC and non-NHSC physicians is differences in the working and living conditions they experience in their rural sites. Likely differences in pay, autonomy, respect

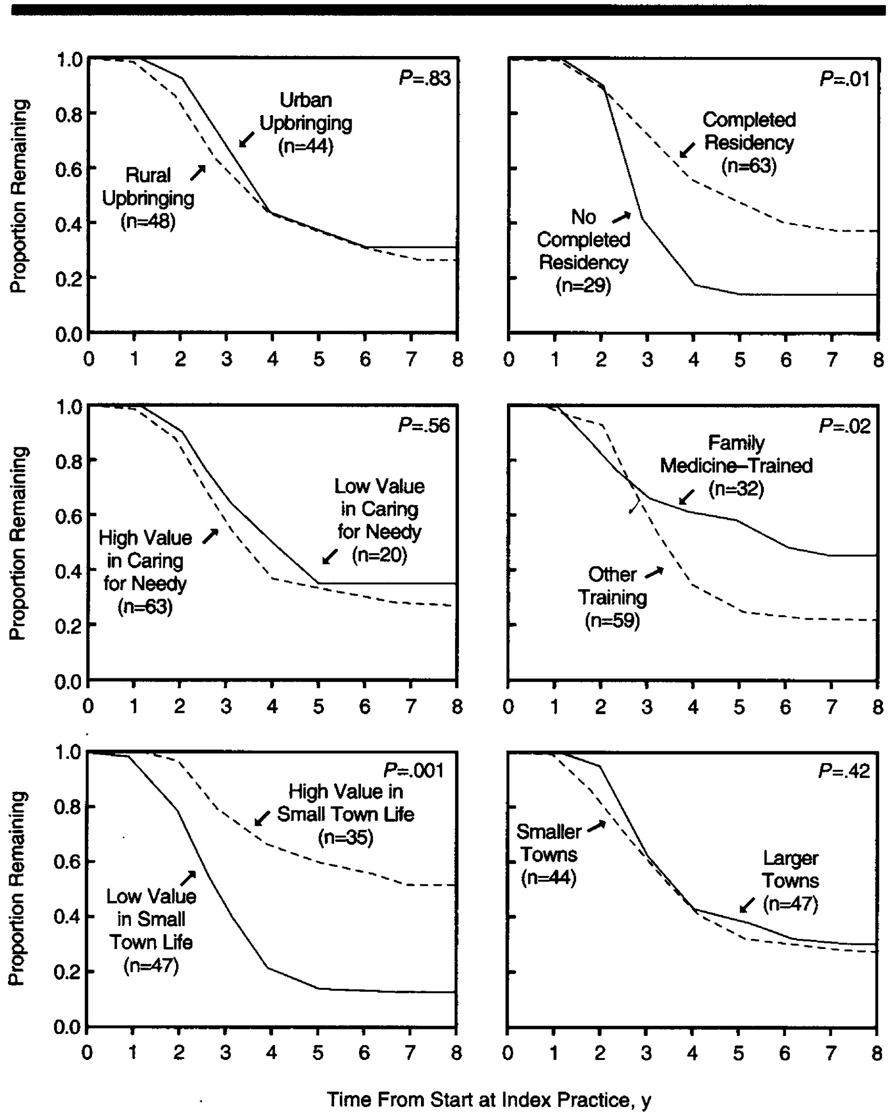

Fig 2.—Proportion of National Health Service Corps physicians remaining in nonmetropolitan areas from their first month of index practice employment among the inception cohort. *P* values are based on single variable proportional hazard models. Middle left, Comparison of those who find caring for the medically needy "important" or "very important" vs "neutral" or "not important." Bottom left, Comparison of those who rate the ability to live in a small community as "important" or "very important" vs "neutral" or "not important." Bottom right, Comparison of those practicing in towns above and below the group median size (population 2100).

received, grievance recourses available, acceptance by the community, and the like, would be expected to affect retention (although not actually measured in this study). Indeed, the management policies of the Corps and its practice sites have been criticized by many physicians, who regard the Corps as a disinterested bureaucracy that treats them as "indentured servants"[25] or as "expendable."[32] Local managers at NHSC sites may treat obligated physicians less favorably than other physicians working side-by-side with them, creating invidious distinctions, heightening a sense of relative deprivation, and fostering poor morale. No formal studies we are aware of have characterized the pervasiveness and depth of morale problems among Corps physicians or identified their causes and consequences. It is crucial to understand the negative aspects of the Corps experience affecting retention because they should be remediable.

It is also possible that a larger number of Corps physicians than non-Corps physicians never intended to remain long term in rural practice. Providing several years of rural service may have been for some an acceptable way to finance a medical education. Once the obligation is fulfilled, these physicians had always intended to pursue other career paths. How many physicians approach their Corps obligations this way has not been demonstrated. Solutions may be for the Corps to (1) place greater emphasis on its Loan Repayment Program if better retention is found there or (2) find ways to make underserved rural practice more attractive to Corps physicians, thus enticing them to alter their career plans.

One of the Corps' long-standing retention strategies has been to award scholarships selectively to applicants with certain demographic and background characteristics believed to predict longer retention. The success of these selection criteria has not been demonstrated.[30] Data presented here suggest that of the selection characteristics examined, only efforts to target those valuing rural living are likely to affect the Corps' retention success, at least among those destined for rural site assignments. Data suggest there is no "ideal physician" who can be drawn into the Corps and counted on to remain long term. It is particularly disturbing that altruism as we measured it did not protect NHSC physicians from a fate of poor retention. A 1977 study of NHSC physician retention found that those who believed the "desire to serve in a medically underserved area" was of some importance in their choice of Corps practice sites were less likely to be retained beyond their obligation periods.[12] A solution to this paradox is needed if the Corps is to become a long-term career option for those interested in working with the underserved.[8]

This study focused on a cohort of primary care NHSC Scholarship Program alumni who had been assigned to rural sites in the late 1970s and early 1980s. The applicability of its findings to physicians currently serving in the Corps' Scholarship Program is likely but not certain. Sites where these physicians worked remain typical of present Corps sites, and only modest changes have been made in the Corps' site placement process. A number of other Corps policies have changed over the past decade, however, and physicians and even the practice of medicine are different. It is also unclear how generalizable the retention findings are to physicians in the Corps' Volunteer and Loan Repayment Programs, to non–primary care and nonphysician Corps providers, and to those serving at urban Corps sites. Although no data are yet available, we suspect that retention in rural settings will be longer for those in the Loan Repayment Program, where the decision to serve in the Corps is made later in physicians' careers.

CONCLUSIONS

Data from this study support the belief that physician retention is a problem for the NHSC. The Corps' retention problem cannot be passed off as a consequence of nonaltruistic physicians unsympathetic to the Corps' mission or as unavoidably due to the particular practices and communities where the Corps is obliged to place its physicians. Findings presented here suggest that retention will not be improved significantly through refinements in applicant selection criteria.

If retention is to be improved, the Corps likely will need to address the causes of low provider morale, as well as the short initial retention expectations of some its physicians. Retention will be improved by better matching physicians with practices they find acceptable. Because four out of five physicians who left their Corps-assigned practices left rural practice altogether, efforts should be made to (1) make Corps site employment attractive enough to keep physicians from relocating and (2) develop mechanisms to promote the transition to other rural and underserved practices for those who will relocate.

Current policies and plans to better prepare obligated students and residents for Corps service[7,8,37] and to provide greater professional and personal support for active Corps assignees[7,8,10] may be helpful, although they remain unproven. Other retention solutions may be found through in-depth examinations of the entire Corps experience from providers' perspectives. The current general interest in making retention a priority for the Corps is on target and needs to be followed up with sound policies based on a solid understanding of past experience.

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